

# Researchers lend expertise to TAMEST shale task force report

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Credit: Texas Tech University

Danny Reible and Denny Bullard in the Whitacre College of Engineering examined the impact of shale oil and gas production on water quality.

The discovery late last year of what the U.S. Geological Survey (USGS) described as the largest continuous oil and gas deposit ever uncovered in the United States could prove to be a large boost to an oil and gas industry seeking to recover from its most recent downturn.

The finding in the Wolfcamp shale area of West Texas is estimated to contain up to 20 billion barrels of oil and 16 trillion cubic feet of natural gas, all of which the USGS said is recoverable using available technology and industry practices.

But doing so will have both economic and environmental impacts on the communities around the Wolfcamp shale. While not focused solely on the Wolfcamp shale development, The Academy of Medicine, Engineering and Science of Texas (TAMEST) commissioned a study to examine such impacts.

TAMEST formed the Shale Task Force to examine the environmental and community impacts of [shale oil](#) and gas development in Texas, releasing a report on its findings on Monday. The 19-member [task force](#), which included experts from across the state with diverse knowledge and expertise, is touted as a first-of-its-kind, comprehensive review mechanism of scientific research and related findings regarding impacts of shale and oil and [gas production](#) in Texas, focusing on six areas – seismicity, land resources, [water](#), air, transportation and community impacts.

Two members of the Edward E. Whitacre Jr. College of Engineering served on the Shale Task Force, titled the Environmental and Community Impacts of Shale Development in Texas. Danny Reible, the Donovan Maddox Distinguished Engineering Chair and professor in the Department of Civil, Environmental and Construction Engineering, and Denny Bullard, an instructor in the Department of Petroleum Engineering, both served as subject matter experts on the task force that helped prepare the report.

Both Reible and Bullard have expertise in the area of water resources, another topic that is of extreme importance to residents in this part of the state. Reible's research focuses on the transport and fate of contaminants in the environment, their assessment and remediation. Bullard's expertise is in production operations with oil and gas companies.

According to the section of the report dealing with water quantity and

quality, led by Reible, hydraulic fracturing, or fracking, uses 1-5 million gallons of water per well on average. While the water used for fracking accounts for less than 1 percent of total statewide water use, it could account for a majority of total water use in some rural counties.

"Even though the overall amount of water used for hydraulic fracturing processes in Texas is low, there are areas within the state where the amount used is much more important and will be of more concern," Reible said.

The report says more research is needed to increase the usage of poor-quality waters instead of freshwater, helping to increase and ensure an adequate supply of drinking water while also minimizing possible incidences of contamination.

And while the report states the depth and separation between oil-bearing and drinking water-bearing zones underground makes contamination of the water unlikely, it also calls for a need to increase prevention of leaks and spills on or near ground surfaces, which are most likely to contaminate drinking-water sources.

"Texas could benefit by better tracking of spills and leaks, particularly of salty produced water, which may pose the greatest risk of shale development to land and water resources," Reible said.

TAMEST brings together the state's best and brightest scientists and researchers. Membership includes all Texas-based members of the National Academies of Science, Engineering and Medicine and the state's Nobel Laureates.

The task force found that Texas leads the nation in oil and gas production, with 1.1 billion barrels produced in 2016. Oil and [natural gas](#) production in 2016, with 250,000 oil and gas wells covering 215 of the

state's 254 counties, generated more than \$1.7 billion in property tax revenue for Texas schools.

Provided by Texas Tech University

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